

**MAJOR STORM WATER MANAGEMENT PLAN  
(MAJOR SWMP)**

**David Puchta Horse Stall Barns**

**Prepared By:  
Mike Smith  
Mike Smith Engineering, Inc.  
P.O. Box 611  
Lodi, CA. 95240  
(209) 334-2332  
(209) 334-0102**

**For  
David Puchta  
31910 Aqueduct Road  
Bonsall, CA 92003**

**AD-05-038  
January 31, 2006**



**MICHAEL W. SMITH R.C.E. 44590**

**8-7-06**  
**RECEIVED**  
**DATE:**  
**AUG 11 2006**  
**DEPARTMENT OF PLANNING  
AND LAND USE**

## **INTRODUCTION**

This site is located at the North West corner of Calle Detalar and Aqueduct road, in the community of Bonsall, California. It presently has a single- family residence and a lemon tree orchard.

The existing drainage is a sheet flow to the South where it is collected in a roadside ditch and directed to culvert pipes, which drain below the road into an existing swale system.

The proposed drainage will use the same drainage pattern, but note that the two large arenas be very beneficial in managing storm water runoff. All storm water collected on site will be directed to these flat areas, where absorption will and evaporation will be the predominant mode of transportation.

Siltation and erosion will not occur during construction because of the silt fences and the fiber rolls. Once construction is complete and the landscaping is matured, siltation and erosion will be controlled by a ground cover on the cut and fill slopes and by grass liners in the drainage swales.

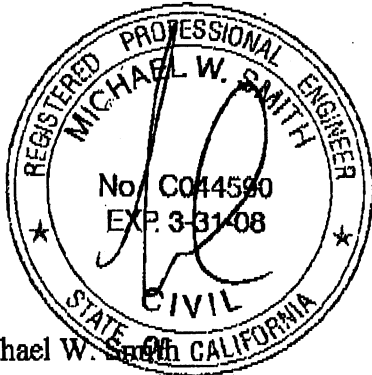
Due to the on site mitigation measures, there should be no adverse effects to the surrounding properties. Refer to the Storm Water Management plan for an in depth discussion of mitigation measures and water quality.

**Preliminary Grading Plan**

1. The outlet channel elevation has been revised to eliminate storm water retention.
2. Legend revised to identify flow line symbol.

**Preliminary Drainage Study**

1. Preliminary grading plan has been revised to show the existing drainage swale located on the property to the north.
2. Hydrology calculations revised to use runoff coefficient found in table 3-1, "runoff coefficients for urban areas".
3. The Hydrologic soil group provided in previous submittal.
4. The actual flow from this site will be reduced as a result of this project due to the detention action of the riding arenas. Therefore, it will enhance the ability of this drainage system to function more efficiently and will enhance the storm water quality.



Michael W. Smith  
Mike Smith Engineering, Inc.  
R.C.E. 44590

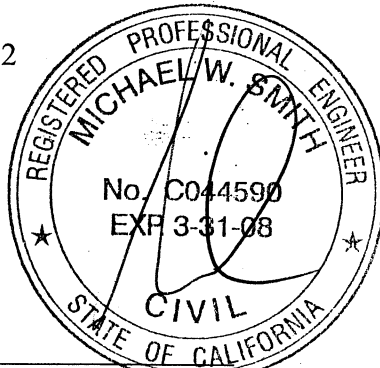
## **DECLARATION OF RESPONSIBLE CHARGE:**

I, HEREBY DECLARE THAT I AM THE CIVIL ENGINEER OF WORK FOR THIS PROJECT, THAT I HAVE EXERCISED RESPONSIBLE CHARGE OVER THE DESIGN OF THE PROJECT AS DEFINED IN SECTION 6703 OF THE BUSSINESS AND PROFESSIONS CODE, AND THAT THE DESIGN IS CONSISTANT WITH CURRENT STANDARDS.

I UNDERSTAND THAT THE CHECK OF PROJECT DRAWINGS AND SPECIFICATIONS BY THE CITY OF SAN DIEGO IS CONFINED TO A REVIEW ONLY AND DOES NOT RELIEVE ME, AS ENGINEER OF WORK, OF MY RESPONSIBILITIES FOR PROJECT DESIGN.

## **ENGINEER OF WORK:**

MIKE SMITH ENGINEERING, INC.  
P.O. BOX 611  
LODI, CA. 95241  
PHONE: (209) 334-2332  
FAX: (209) 334-0102  
PROJECT NO. 05159  
David Puchta



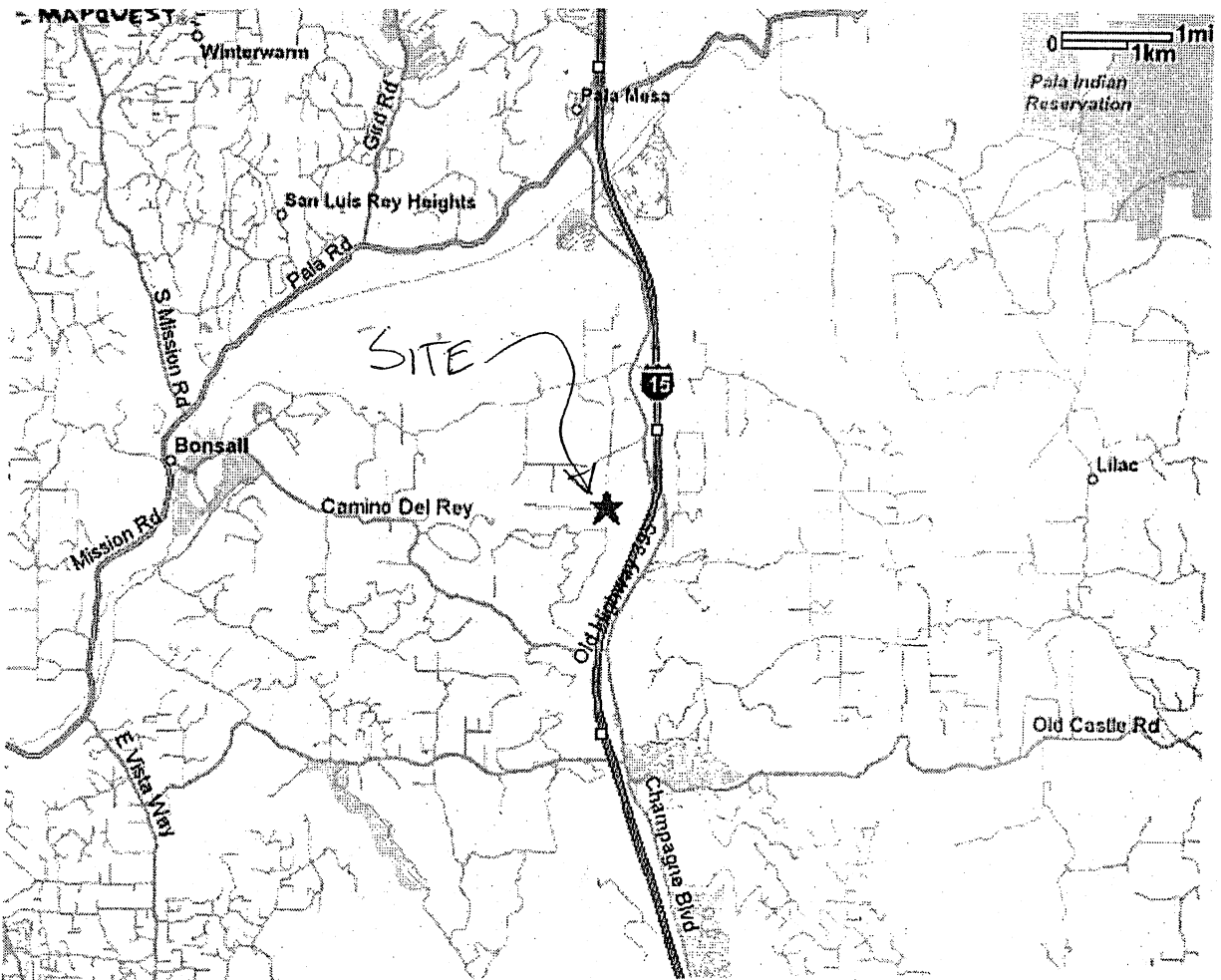
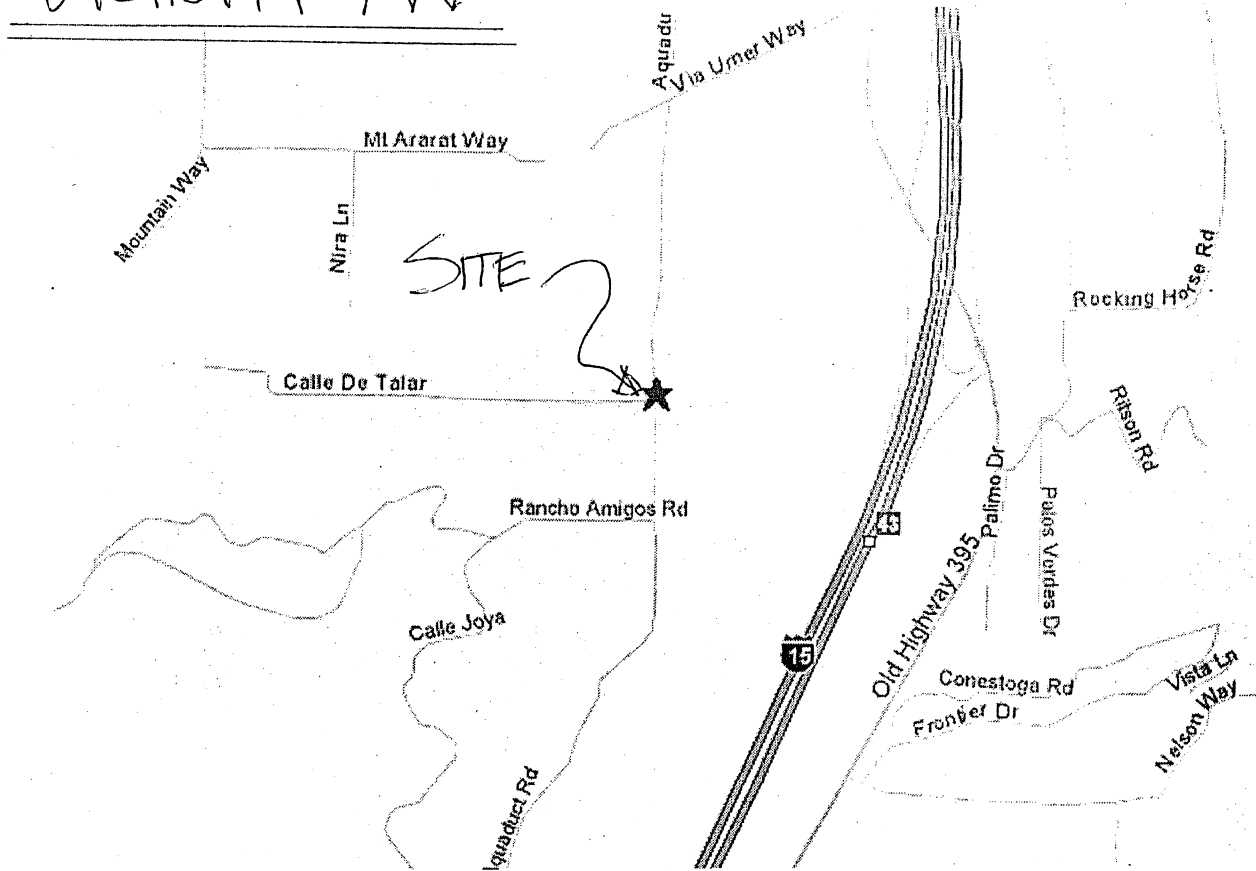
MICHAEL W. SMITH  
EXP. 3-31-08

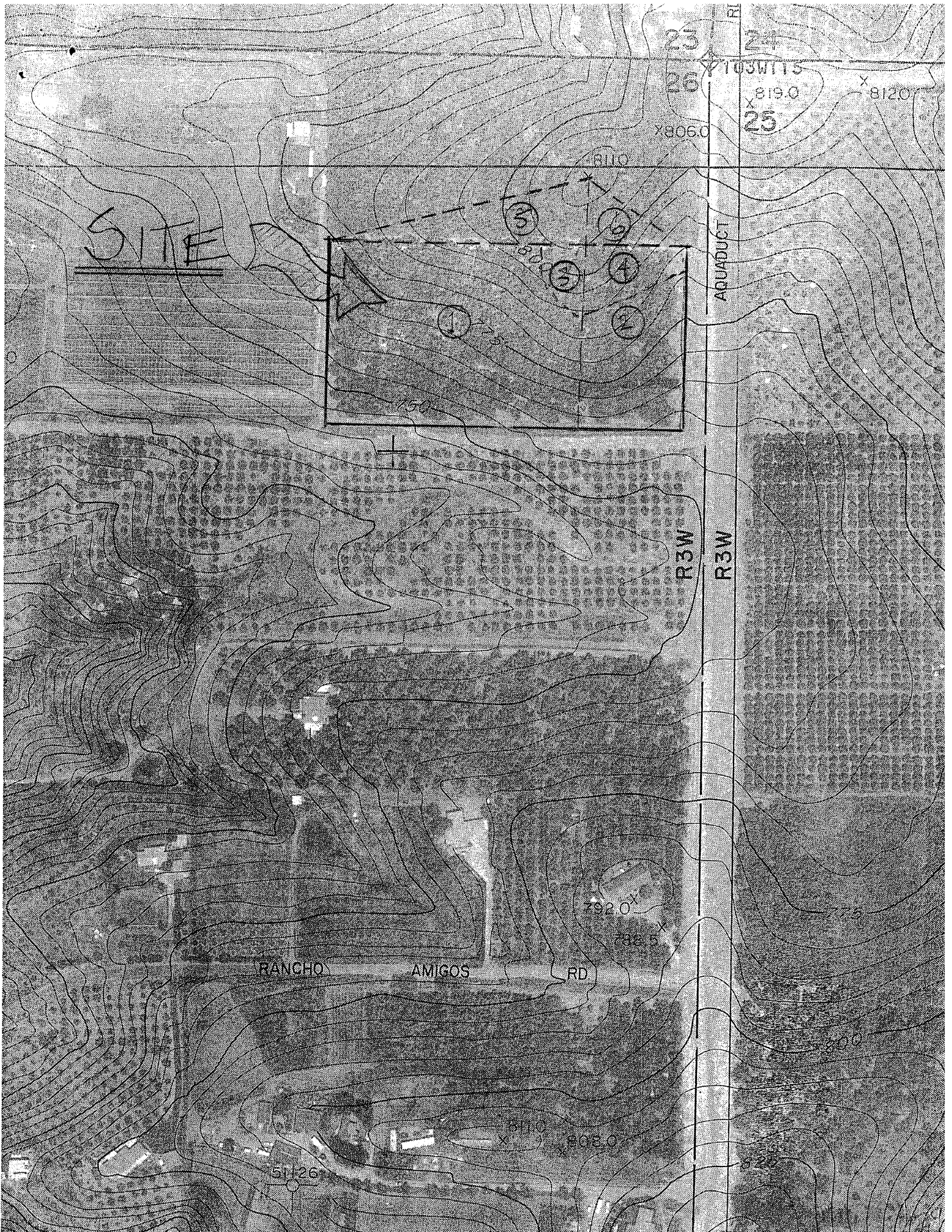
R.C.E. 44590

8-7-00  
DATE



# VICINITY MAP





**Storm Water Management Plan  
For Priority Projects  
(Major SWMP)**

Project Name:	PUCHTA BARNS
Permit Number (Land Development Projects):	AD 05-038
Work Authorization Number (CIP):	
Applicant:	DAVID PUCHTA
Applicant's Address:	31910 AQUADUCT RD. BENKALL, CA 92003
Plan Prepare By (Leave blank if same as applicant):	MIKE SMITH ENGINEERING, INC. P.O. BOX 611, LODI, CA 95241
Date:	1-23-06
Revision Date (If applicable):	

The County of San Diego Watershed Protection, Storm Water Management, and Discharge Control Ordinance (WPO) (Ordinance No. 9424) requires all applications for a permit or approval associated with a Land Disturbance Activity must be accompanied by a Storm Water Management Plan (SWMP) (section 67.804.f). The purpose of the SWMP is to describe how the project will minimize the short and long-term impacts on receiving water quality. Projects that meet the criteria for a priority project are required to prepare a Major SWMP.

Since the SWMP is a living document, revisions may be necessary during various stages of approval by the County. Please provide the approval information requested below.

Project Review Stage	Does the SWMP need revisions?		If YES, Provide Revision Date
	YES	NO	
SECOND ITERATION REVIEW	X		2-13-06
THIRD ITERATION REVIEW	X		5-17-06

Instructions for a Major SWMP can be downloaded at <http://www.co.san-diego.ca.us/dpw/stormwater/susmp.html>.

Completion of the following checklist and attachments will fulfill the requirements of a Major SWMP for the project listed above.

**PROJECT DESCRIPTION**

Please provide a brief description of the project in the following box. For example:

The 50-acre RC Ranch project is located on the south side of San Miguel Road in the County of San Diego (See Attachment 1). The project is approximately 1.0 mile east of the intersection of San Miguel Avenue and San Miguel Road and 1 mile south of the Sweetwater Reservoir. This project will consist of a planned residential community comprising of 45 single-family homes 72 and multi-unit dwellings.

--

THIS PARCEL IS AN EXISTING AGRICULTURAL OPERATION, LEMON TREE ORCHARD. THE NEW OWNER PROPOSES TWO HORSE STALL BARN'S AND TWO RIDING ARENAS. IT IS A 5.20 ACRE PARCEL LOCATED AT THE NORTH WEST CORNER OF CALLE DE TALAR AND AQUADUCT ROAD. THERE IS AN EXISTING SINGLE FAMILY RESIDENCE ON THIS SITE.

### PRIORITY PROJECT DETERMINATION

Please check the box that best describes the project. Does the project meet one of the following criteria?

PRIORITY PROJECT	YES	NO
Redevelopment within the County Urban Area that creates or adds at least 5,000 net square feet of additional impervious surface area	X	
Residential development of more than 10 units		X
Commercial developments with a land area for development of greater than 100,000 square feet		X
Automotive repair shops		X
Restaurants, where the land area for development is greater than 5,000 square feet		X
Hillside development, in an area with known erosive soil conditions, where there will be grading on any natural slope that is twenty-five percent or greater, if the development creates 5,000 square feet or more of impervious surface		X
Environmentally Sensitive Areas: All development and redevelopment located within or directly adjacent to or discharging directly to an environmentally sensitive area (where discharges from the development or redevelopment will enter receiving waters within the environmentally sensitive area), which either creates 2,500 square feet of impervious surface on a proposed project site or increases the area of imperviousness of a proposed project site to 10% or more of its naturally occurring condition.		X
Parking Lots 5,000 square feet or more or with 15 parking spaces or more and potentially exposed to urban runoff		X
Streets, roads, highways, and freeways which would create a new paved surface that is 5,000 square feet or greater		X

**Limited Exclusion:** Trenching and resurfacing work associated with utility projects are not considered priority projects. Parking lots, buildings and other structures associated with utility projects are subject to SUSMP requirements if one or more of the criteria above are met.

If you answered **NO** to all the questions, then **STOP**. Please complete a Minor SWMP for your project.

If you answered **YES** to any of the questions, please continue.

The following questions provide a guide to collecting information relevant to project stormwater quality issues. Please provide a description of the findings in text box below.

	QUESTIONS	COMPLETED	NA
1.	Describe the topography of the project area.	X	
2.	Describe the local land use within the project area and adjacent areas.	X	
3.	Evaluate the presence of dry weather flow.	X	
4.	Determine the receiving waters that may be affected by the project throughout the project life cycle (i.e., construction, maintenance and operation).	X	
5.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.	X	
6.	Determine if there are any High Risk Areas (municipal or domestic water supply reservoirs or groundwater percolation facilities) within the project limits.	X	
7.	Determine the Regional Board special requirements, including TMDLs, effluent limits, etc.	X	
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	X	
9.	If considering Treatment BMPs, determine the soil classification, permeability, erodibility, and depth to groundwater.	X	
10.	Determine contaminated or hazardous soils within the project area.	X	

Please provide a description of the findings in the following box. For example:

The project is located in the San Diego Hydrologic unit. The area is characterized by rolling grassy hills and shrubs. Runoff from the project drains into a MS4 that eventually drains to Los Coches Creek. Within the project limit there are no 303(d) impaired receiving water and no Regional Board special requirements.

THE PROJECT IS LOCATED IN THE SAN LUIS REY HYDROLOGIC UNIT (903.12) THE IMMEDIATE AREA IS CHARACTERIZED BY ROLLING HILLS WITH AGRICULTURAL OPERATIONS. RUN-OFF DRAINS TO SAN LUIS REY RIVER. WITHIN THE PROJECT LIMITS THERE ARE NO 303(d) IMPAIRED RECEIVING WATER AND NO REGIONAL BOARD SPECIAL REQUIREMENTS.

Complete the checklist below to determine if Treatment Best Management Practices (BMPs) are required for the project.

No.	CRITERIA	YES	NO	INFORMATION
1.	Is this an emergency project		X	If YES, go to 6. If NO, continue to 2.
2.	Have TMDLs been established			If YES, go to 5.



No.	CRITERIA	YES	NO	INFORMATION
	for surface waters within the project limit?		X	If NO, continue to 3.
3.	Will the project directly discharge to a 303(d) impaired receiving water body?		X	If YES, go to 5. If NO, continue to 4.
4.	Is this project within the urban and environmentally sensitive areas as defined on the maps in Appendix B of the <i>County of San Diego Standard Urban Storm Water Mitigation Plan for Land Development and Public Improvement Projects</i> ?		X	If YES, continue to 5. If NO, go to 6.
5.	Consider approved Treatment BMPs for the project.	X		If YES, go to 7.
6.	Project is not required to consider Treatment BMPs			Document for Project Files by referencing this checklist.
7.	End			

Now that the need for a treatment BMPs has been determined, other information is needed to complete the SWMP.

## WATERSHED

Please check the watershed(s) for the project.

- |                                       |  |  |   |
|---------------------------------------|--|--|---|
| <input type="checkbox"/> San Juan     | <input type="checkbox"/> Santa Margarita | <input checked="" type="checkbox"/> San Luis Rey | <input type="checkbox"/> Carlsbad         |
| <input type="checkbox"/> San Dieguito | <input type="checkbox"/> Penasquitos     | <input type="checkbox"/> San Diego               | <input type="checkbox"/> Pueblo San Diego |
| <input type="checkbox"/> Sweetwater   | <input type="checkbox"/> Otay            | <input type="checkbox"/> Tijuana                 |   |

Please provide the hydrologic sub-area and number(s)

Number	Name
903.12	LOWER SAN LUIS

Please provide the beneficial uses for Inland Surface Waters and Ground Waters. Beneficial Uses can be obtained from the Water Quality Control Plan For The San Diego Basin, which is available at the Regional Board office or at <http://www.swrcb.ca.gov/rwqcb9/programs/basinplan.html>.

SURFACE WATERS	Hydrologic Unit Basin Number	MUN	AGR	IND	PROC	GWR	FRESH	POW	REC1	REC2	BIOL	WARM	COLD	WILD	RARE	SPWN
Inland Surface Waters	3.12	*	X	X					X	X		X		X	X	
Ground Waters	3.10	X	X	X												

X Existing Beneficial Use  
 0 Potential Beneficial Use  
 \* Excepted from Municipal

THE MINIMAL AMOUNT OF WATER ASSOCIATED  
 WITH THIS PROJECT CAN NOT BE SIGNIFICANT  
 ENOUGH TO CREATE A BENEFICIAL USE.

## POLLUTANTS OF CONCERN

Using Table 1, identify pollutants that are anticipated to be generated from the proposed priority project categories. Pollutants associated with any hazardous material sites that have been remediated or are not threatened by the proposed project are not considered a pollutant of concern.

**Table 1. Anticipated and Potential Pollutants Generated by Land Use Type**

Priority Project Categories	General Pollutant Categories								
	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Detached Residential Development	X	X			X	X	X	X	X
Attached Residential Development	X	X			X	P <sup>(1)</sup>	P <sup>(2)</sup>	P	X
Commercial Development >100,000 ft <sup>2</sup>	P <sup>(1)</sup>	P <sup>(1)</sup>		P <sup>(2)</sup>	X	P <sup>(5)</sup>	X	P <sup>(3)</sup>	P <sup>(5)</sup>
Automotive Repair Shops			X	X <sup>(4)(5)</sup>	X		X		
Restaurants					X	X	X	X	
Hillside Development >5,000 ft <sup>2</sup>	X	X			X	X	X		X

	<b>General Pollutant Categories</b>								
<b>Priority Project Categories</b>	Sediments	Nutrients	Heavy Metals	Organic Compounds	Trash & Debris	Oxygen Demanding Substances	Oil & Grease	Bacteria & Viruses	Pesticides
Parking Lots	p <sup>(1)</sup>	p <sup>(1)</sup>	X		X	p <sup>(1)</sup>	X		p <sup>(1)</sup>
Streets, Highways & Freeways	X	p <sup>(1)</sup>	X	X <sup>(4)</sup>	X	p <sup>(5)</sup>	X		
X = anticipated P = potential (1) A potential pollutant if landscaping exists on-site. (2) A potential pollutant if the project includes uncovered parking areas. (3) A potential pollutant if land use involves food or animal waste products. (4) Including petroleum hydrocarbons. (5) Including solvents.									

**Note:** If other monitoring data that is relevant to the project is available. Please include as Attachment C.

*NO POLLUTANTS ARE ASSOCIATED WITH THIS PROJECT.*

### CONSTRUCTION BMPs

Please check the construction BMPs that may be used. The BMPs selected are those that will be implemented during construction of the project. The applicant is responsible for the placement and maintenance of the BMPs selected.

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> Silt Fence  | <input type="checkbox"/> Desilting Basin                      |
| <input checked="" type="checkbox"/> Fiber Rolls   | <input type="checkbox"/> Gravel Bag Berm                      |
| <input type="checkbox"/> Street Sweeping and Vacuuming  | <input type="checkbox"/> Sandbag Barrier                      |
| <input type="checkbox"/> Storm Drain Inlet Protection   | <input type="checkbox"/> Material Delivery and Storage        |
| <input type="checkbox"/> Stockpile Management   | <input type="checkbox"/> Spill Prevention and Control         |
| <input type="checkbox"/> Solid Waste Management   | <input checked="" type="checkbox"/> Concrete Waste Management |
| <input type="checkbox"/> Stabilized Construction Entrance/Exit  | <input type="checkbox"/> Water Conservation Practices         |
| <input type="checkbox"/> Dewatering Operations  | <input type="checkbox"/> Paving and Grinding Operations       |
| <input type="checkbox"/> Vehicle and Equipment Maintenance  |   |
| <input type="checkbox"/> Any minor slopes created incidental to construction and not subject to a major or minor grading permit shall be protected by covering with plastic or tarp prior to a rain event, and shall have vegetative cover reestablished within 180 days of completion of the slope and prior to final building approval. |   |

### SITE DESIGN

To minimize stormwater impacts, site design measures must be addressed. The following checklist provides options for avoiding or reducing potential impacts during project planning. If



YES is checked, it is assumed that the measure was used for this project. If NO is checked, please provide a brief explanation why the option was not selected in the text box below.

	OPTIONS	YES	NO	N/A
1.	Can the project be relocated or realigned to avoid/reduce impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions?		X	
2.	Can the project be designed to minimize impervious footprint?		X	
3.	Conserve natural areas where feasible?			X
4.	Where landscape is proposed, can rooftops, impervious sidewalks, walkways, trails and patios be drained into adjacent landscaping?	X		
5.	For roadway projects, can structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?			X
6.	Can any of the following methods be utilized to minimize erosion from slopes:			
6.a.	Disturbing existing slopes only when necessary?	X		
6.b.	Minimize cut and fill areas to reduce slope lengths?	X		
6.c.	Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?		X	
6.d.	Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?		X	
6.e.	Rounding and shaping slopes to reduce concentrated flow?	X		
6.f.	Collecting concentrated flows in stabilized drains and channels?	X		

Please provide a brief explanation for each option that was checked N/A or NO in the following box.

1. THIS IS A SMALL SITE, WITH NO ROOM TO MOVE OR RELOCATE PROPOSED PARKS. ROOF DRAINS ARE DIRECTED TO ARENAS.

2. BUILDING SIZES ARE SET, THERE IS NO PAULING AS PART OF THIS PROJECT.

6.c. RETAINING WALLS FINANCIALLY ARE NOT FEASIBLE.

6.d. NO ROOM TO BENCH OR TERRACE SLOPES

If the project includes work in channels, then complete the following checklist. Information shall be obtained from the project drainage report.

No.	CRITERIA	YES	NO	N/A	COMMENTS
1.	Will the project increase velocity or volume of downstream flow?		X		If YES go to 5.
2.	Will the project discharge to unlined channels?	X			If YES go to 5.
3.	Will the project increase potential sediment load	X			If YES go to 5.

No.	CRITERIA	YES	NO	N/A	COMMENTS
	of downstream flow?	X			
4.	Will the project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect upstream and/or downstream channel stability?	X			If YES go to 7.
5.	Review channel lining materials and design for stream bank erosion.		X		Continue to 6.
6.	Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.	X			Continue to 7.
7.	Include, where appropriate, energy dissipation devices at culverts.	X			Continue to 8.
8.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.			X	Continue to 9.
9.	Include, if appropriate, detention facilities to reduce peak discharges.	X			
10.	“Hardening” natural downstream areas to prevent erosion is not an acceptable technique for protecting channel slopes, unless pre-development conditions are determined to be so erosive that hardening would be required even in the absence of the proposed development.			X	Continue to 11.
11.	Provide other design principles that are comparable and equally effective.			X	Continue to 12.
12.	End				

## SOURCE CONTROL

Please complete the following checklist for Source Control BMPs. If the BMP is not applicable for this project, then check N/A only at the main category.

BMP			YES	NO	N/A
1.	<b>Provide Storm Drain System Stenciling and Signage</b>				X
	1.a.	All storm drain inlets and catch basins within the project area shall have a stencil or tile placed with prohibitive language (such as: “NO DUMPING – DRAINS TO _____”) and/or graphical icons to discourage illegal dumping.			
	1.b.	Signs and prohibitive language and/or graphical icons, which prohibit illegal dumping, must be posted at public access points along channels and creeks within the project area.			
2.	<b>Design Outdoors Material Storage Areas to Reduce Pollution Introduction</b>				
	2.a.	This is a detached single-family residential project. Therefore, personal storage areas are exempt from this requirement.		X	

<b>BMP</b>			<b>YES</b>	<b>NO</b>	<b>N/A</b>
	2.b.	Hazardous materials with the potential to contaminate urban runoff shall either be: (1) placed in an enclosure such as, but not limited to, a cabinet, shed, or similar structure that prevents contact with runoff or spillage to the storm water conveyance system; or (2) protected by secondary containment structures such as berms, dikes, or curbs.	X		
	2.c.	The storage area shall be paved and sufficiently impervious to contain leaks and spills.	X		
	2.d.	The storage area shall have a roof or awning to minimize direct precipitation within the secondary containment area.	X		
3.	<b>Design Trash Storage Areas to Reduce Pollution Introduction</b>				
	3.a.	Paved with an impervious surface, designed not to allow run-on from adjoining areas, screened or walled to prevent off-site transport of trash; or,	X		
	3.b.	Provide attached lids on all trash containers that exclude rain, or roof or awning to minimize direct precipitation.	X		
4.	<b>Use Efficient Irrigation Systems &amp; Landscape Design</b>				
	The following methods to reduce excessive irrigation runoff shall be considered, and incorporated and implemented where determined applicable and feasible.				
	4.a.	Employing rain shutoff devices to prevent irrigation after precipitation.	X		
	4.b.	Designing irrigation systems to each landscape area's specific water requirements.	X		
	4.c.	Using flow reducers or shutoff valves triggered by a pressure drop to control water loss in the event of broken sprinkler heads or lines.		X	
	4.d.	Employing other comparable, equally effective, methods to reduce irrigation water runoff.	X		
5.	<b>Private Roads</b>				X
	The design of private roadway drainage shall use at least one of the following				
	5.a.	Rural swale system: street sheet flows to vegetated swale or gravel shoulder, curbs at street corners, culverts under driveways and street crossings.			
	5.b.	Urban curb/swale system: street slopes to curb, periodic swale inlets drain to vegetated swale/biofilter.			
	5.c.	Dual drainage system: First flush captured in street catch basins and discharged to adjacent vegetated swale or gravel shoulder, high flows connect directly to storm water conveyance system.			
	5.d.	Other methods that are comparable and equally effective within the project.			
6.	<b>Residential Driveways &amp; Guest Parking</b>				X
	The design of driveways and private residential parking areas shall use one at least of the following features.				
	6.a.	Design driveways with shared access, flared (single lane at street) or wheelstrips (paving only under tires); or, drain into landscaping prior to discharging to the storm water conveyance system.			
	6.b.	Uncovered temporary or guest parking on private residential lots may be: paved with a permeable surface; or, designed to drain into landscaping prior to discharging to the storm water conveyance system.			
	6.c.	Other features which are comparable and equally effective.			
7.	<b>Dock Areas</b>				X

<b>BMP</b>		<b>YES</b>	<b>NO</b>	<b>N/A</b>
	Loading/unloading dock areas shall include the following.			
7.a.	Cover loading dock areas, or design drainage to preclude urban run-on and runoff.			
7.b.	Direct connections to storm drains from depressed loading docks (truck wells) are prohibited.			
7.c.	Other features which are comparable and equally effective.			
8.	<b>Maintenance Bays</b>			
	Maintenance bays shall include the following.			X
8.a.	Repair/maintenance bays shall be indoors; or, designed to preclude urban run-on and runoff.			
8.b.	Design a repair/maintenance bay drainage system to capture all wash water, leaks and spills. Connect drains to a sump for collection and disposal. Direct connection of the repair/maintenance bays to the storm drain system is prohibited. If required by local jurisdiction, obtain an Industrial Waste Discharge Permit.			
8.c.	Other features which are comparable and equally effective.			
9.	<b>Vehicle Wash Areas</b>			X
	Priority projects that include areas for washing/steam cleaning of vehicles shall use the following.			
9.a.	Self-contained; or covered with a roof or overhang.			
9.b.	Equipped with a clarifier or other pretreatment facility.			
9.c.	Properly connected to a sanitary sewer.			
9.d.	Other features which are comparable and equally effective.			
10.	<b>Outdoor Processing Areas</b>			X
	Outdoor process equipment operations, such as rock grinding or crushing, painting or coating, grinding or sanding, degreasing or parts cleaning, waste piles, and wastewater and solid waste treatment and disposal, and other operations determined to be a potential threat to water quality by the County shall adhere to the following requirements.			
10.a.	Cover or enclose areas that would be the most significant source of pollutants; or, slope the area toward a dead-end sump; or, discharge to the sanitary sewer system following appropriate treatment in accordance with conditions established by the applicable sewer agency.			
10.b.	Grade or berm area to prevent run-on from surrounding areas.			
10.c.	Installation of storm drains in areas of equipment repair is prohibited.			
10.d.	Other features which are comparable or equally effective.			
11.	<b>Equipment Wash Areas</b>			X
	Outdoor equipment/accessory washing and steam cleaning activities shall be.			
11.a.	Be self-contained; or covered with a roof or overhang.			
11.b.	Be equipped with a clarifier, grease trap or other pretreatment facility, as appropriate			
11.c.	Be properly connected to a sanitary sewer.			
11.d.	Other features which are comparable or equally effective.			
12.	<b>Parking Areas</b>			X
	The following design concepts shall be considered, and incorporated and implemented where determined applicable and feasible by the County.			
12.a.	Where landscaping is proposed in parking areas, incorporate landscape areas into the drainage design.			

BMP			YES	NO	N/A
	12.b.	Overflow parking (parking stalls provided in excess of the County's minimum parking requirements) may be constructed with permeable paving.			
	12.c.	Other design concepts that are comparable and equally effective.			
13.	<b>Fueling Area</b>				X
	Non-retail fuel dispensing areas shall contain the following.				
	13.a.	Overhanging roof structure or canopy. The cover's minimum dimensions must be equal to or greater than the area within the grade break. The cover must not drain onto the fuel dispensing area and the downspouts must be routed to prevent drainage across the fueling area. The fueling area shall drain to the project's treatment control BMP(s) prior to discharging to the storm water conveyance system.			
	13.b.	Paved with Portland cement concrete (or equivalent smooth impervious surface). The use of asphalt concrete shall be prohibited.			
	13.c.	Have an appropriate slope to prevent ponding, and must be separated from the rest of the site by a grade break that prevents run-on of urban runoff.			
	13.d.	At a minimum, the concrete fuel dispensing area must extend 6.5 feet (2.0 meters) from the corner of each fuel dispenser, or the length at which the hose and nozzle assembly may be operated plus 1 foot (0.3 meter), whichever is less.			

Please list other project specific Source Control BMPs in the following box. Write N/A if there are none and briefly explain.

HORSE MANURE STORED UNDER ROOF AND REMOVED FROM SITE TWICE A WEEK. SEE ATTACHED VECTOR MANAGEMENT PLAN.

## TREATMENT CONTROL

To select a structural treatment BMP using Treatment Control BMP Selection Matrix (Table 2), each priority project shall compare the list of pollutants for which the downstream receiving waters are impaired (if any), with the pollutants anticipated to be generated by the project (as identified in Table 1). Any pollutants identified by Table 1, which are also causing a Clean Water Act section 303(d) impairment of the receiving waters of the project, shall be considered primary pollutants of concern. Priority projects that are anticipated to generate a primary pollutant of concern shall select a single or combination of stormwater BMPs from Table 2, which **maximizes pollutant removal** for the particular primary pollutant(s) of concern.

Priority projects that are **not** anticipated to generate a pollutant for which the receiving water is Clean Water Act Section 303(d) impaired shall select a single or combination of stormwater BMPs from Table 2, which are effective for pollutant removal of the identified secondary pollutants of concern, consistent with the "maximum extent practicable" standard.

**Table 2. Treatment Control BMP Selection Matrix**

Pollutant of Concern	Treatment Control BMP Categories						
	Biofilters	Detention Basins	Infiltration Basins <sup>(2)</sup>	Wet Ponds or Wetlands	Drainage Inserts	Filtration	Hydrodynamic Separator Systems <sup>(3)</sup>
Sediment	M	H	H	H	L	H	M
Nutrients	L	M	M	M	L	M	L
Heavy Metals	M	M	M	H	L	H	L
Organic Compounds	U	U	U	M	L	M	L
Trash & Debris	L	H	U	H	M	H	M
Oxygen Demanding Substances	L	M	M	M	L	M	L
Bacteria	U	U	H	H	L	M	L
Oil & Grease	M	M	U	U	L	H	L
Pesticides	U	U	U	L	L	U	L
<p>(1) Copermittees are encouraged to periodically assess the performance characteristics of many of these BMPs to update this table.</p> <p>(2) Including trenches and porous pavement.</p> <p>(3) Also known as hydrodynamic devices and baffle boxes.</p> <p>L: Low removal efficiency:  M: Medium removal efficiency:  H: High removal efficiency:  U: Unknown removal efficiency</p> <p>Sources: <i>Guidance Specifying Management Measures for Sources of Nonpoint Pollution in Coastal Waters</i> (1993), <i>National Stormwater Best Management Practices Database</i> (2001), <i>Guide for BMP Selection in Urban Developed Areas</i> (2001), and <i>Caltrans New Technology Report</i> (2001).</p>							

A Treatment BMP must address runoff from developed areas. Please provide the post-construction water quality values for the project. Label outfalls on the BMP map.  $Q_{wq}$  is dependent on the type of treatment BMP selected for the project.

Outfall	Tributary Area (acres)	$Q_{100}$ (cfs)	$Q_{wq}$ (cfs)
AQUADUCT	1.85	3.15	2.68
CANAL DETAIL	1.94	3.30	2.81

Please check the box(s) that best describes the Treatment BMP(s) selected for this project.

#### Biofilters

- ☒ Grass swale  
☐ Grass strip  
☐ Wetland vegetation swale  
☐ Bioretention

#### Detention Basins

- ☐ Extended/dry detention basin with grass lining  
☐ Extended/dry detention basin with impervious lining

### Infiltration Basins

- ☐ Infiltration basin
- ☐ Infiltration trench
- ☐ Porous asphalt
- ☐ Porous concrete
- ☐ Porous modular concrete block

### Wet Ponds or Wetlands

- ☐ Wet pond/basin (permanent pool)
- ☐ Constructed wetland

### Drainage Inserts (See note below)

- ☐ Oil/Water separator
- ☐ Catch basin insert
- ☐ Storm drain inserts
- ☐ Catch basin screens

### Filtration

- ☐ Media filtration
- ☐ Sand filtration

### Hydrodynamic Separator Systems

- ☐ Swirl Concentrator
- ☐ Cyclone Separator
- ☐ Baffle Separator
- ☐ Gross Solids Removal Device
- ☐ Linear Radial Device

1. TREATMENT BMP'S BASED UPON  
RECOMMENDATIONS FOUND IN  
"WATER QUALITY BEST MANAGEMENT  
PRACTICES AT EQUESTRIAN FACILITIES"  
BY COUNTY OF SAN DIEGO DEPARTMENT  
OF AGRICULTURE, WEIGHTS & MEASURES

**Note:** Catch basin inserts and storm drain inserts are excluded from use on County maintained right-of-way and easements.

Include Treatment Datasheet as Attachment E. The datasheet should include the following:	COMPLETED	NO
1. Description of how treatment BMP was designed. Provide a description for each type of treatment BMP.	X	
2. Engineering calculations for the BMP(s)	X <sup>(a)</sup>	

(a) SEE CEQA DRAINAGE STUDY

Please describe why the selected treatment BMP(s) was selected for this project. For projects utilizing a low performing BMP, please provide a detailed explanation and justification.

GRASSY SWALES / BIO FILTER AND ENERGY DISSIPATORS WERE  
SELECTED BECAUSE OF THERE COMPATIBILITY WITH THE PROJECT  
AND THEIR SELF-PERPETUATING OPERATION.

### MAINTENANCE

Please check the box that best describes the maintenance mechanism(s) for this project.

CATEGORY	SELECTED	
	YES	NO
First	X	
Second		X
Third		X
Fourth		X

Please briefly describe the long-term fiscal resources for the selected maintenance mechanism(s).

SWALES WILL BE MAINTAINED/MANAGED BY PROPERTY OWNER AT A COST OF \$200/MONTH AND AN AVERAGE ANNUAL COST OF \$2,400/YEAR.

## ATTACHMENTS

Please include the following attachments.

ATTACHMENT		COMPLETED	N/A
A	Project Location Map	X	
B	Site Map	X	
C	Relevant Monitoring Data		X
D	Treatment BMP Location Map	X	
E	Treatment BMP Datasheets	X	
F	Operation and Maintenance Program for Treatment BMPs	X	
G	Engineer's Certification Sheet	X	

**Note:** Attachments A and B may be combined.



Answers to questions from P#3, Major SWMP

1. Topography can be described as a gentle slope, approximately 8%.
2. This site was previously an agricultural operation, lemon tree orchard, and also has a single family residence. The surrounding parcels are similar in size and use, rural, agricultural with single family residences.
3. This site does not experience any dry weather flow.
4. The intent of this project is to have no effect on receiving waters. Construction will be mitigated by erosion control elements, i.e. fiber rolls and silt fences. Post construction will be mitigated by bio-filters and waste management.

This site is a part of the San Luis Rey water shed. This site is at the top of a hill and therefore is the initial source. Water is directed to immediate drainage facilities via drainage swales.

5. CWA 303(d) List: Coliform bacteria at the San Luis Rey River mouth at the Pacific Ocean.
6. At this time, we are unaware of any high risk areas connected to this project. There are none on site.
7. This project is well below the limits set by the regional board for surface water discharges.
8. Refer to CEQA Preliminary Drainage Study for a complete discussion of rainfall intensity. Annual rainfall is approximately 15 inches per year.
9. The soils in this area are classified as "DG" (Decomposed Granite). They have superior engineering properties including low potential for expansion, high shear strength and high bearing capacity. Compacted "DG" will have low percolation rates, and bare fill slopes can erode easily. The project area's hydrologic soil group is type "B".

At this time depth to ground water is unknown.

10. At this time, there have not been any identified or discovered hazardous soils within the project limits.

---

Michael W. Smith  
RCE 44590

---

Date

**Table 3-1  
RUNOFF COEFFICIENTS FOR URBAN AREAS**

Land Use		Runoff Coefficient "C"				
NRCS Elements	County Elements	% IMPER.	Soil Type			
			A	B	C	D
Undisturbed Natural Terrain (Natural)	Permanent Open Space	0*	0.20	0.25	0.30	0.35
Low Density Residential (LDR)	Residential, 1.0 DU/A or less	10	0.27	0.32	0.36	0.41
Low Density Residential (LDR)	Residential, 2.0 DU/A or less	20	0.34	0.38	0.42	0.46
Low Density Residential (LDR)	Residential, 2.9 DU/A or less	25	0.38	0.41	0.45	0.49
Medium Density Residential (MDR)	Residential, 4.3 DU/A or less	30	0.41	0.45	0.48	0.52
Medium Density Residential (MDR)	Residential, 7.3 DU/A or less	40	0.48	0.51	0.54	0.57
Medium Density Residential (MDR)	Residential, 10.9 DU/A or less	45	0.52	0.54	0.57	0.60
Medium Density Residential (MDR)	Residential, 14.5 DU/A or less	50	0.55	0.58	0.60	0.63
High Density Residential (HDR)	Residential, 24.0 DU/A or less	65	0.66	0.67	0.69	0.71
High Density Residential (HDR)	Residential, 43.0 DU/A or less	80	0.76	0.77	0.78	0.79
Commercial/Industrial (N. Com)	Neighborhood Commercial	80	0.76	0.77	0.78	0.79
Commercial/Industrial (G. Com)	General Commercial	85	0.80	0.80	0.81	0.82
Commercial/Industrial (O.P. Com)	Office Professional/Commercial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (Limited I.)	Limited Industrial	90	0.83	0.84	0.84	0.85
Commercial/Industrial (General I.)	General Industrial	95	0.87	0.87	0.87	0.87

\*The values associated with 0% impervious may be used for direct calculation of the runoff coefficient as described in Section 3.1.2 (representing the pervious runoff coefficient,  $C_p$ , for the soil type), or for areas that will remain undisturbed in perpetuity. Justification must be given that the area will remain natural forever (e.g., the area is located in Cleveland National Forest).

DU/A = dwelling units per acre

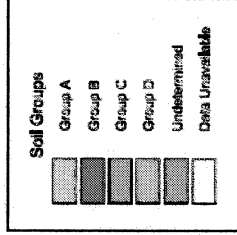
NRCS = National Resources Conservation Service

# County of San Diego Hydrology Manual



## Soil Hydrologic Groups

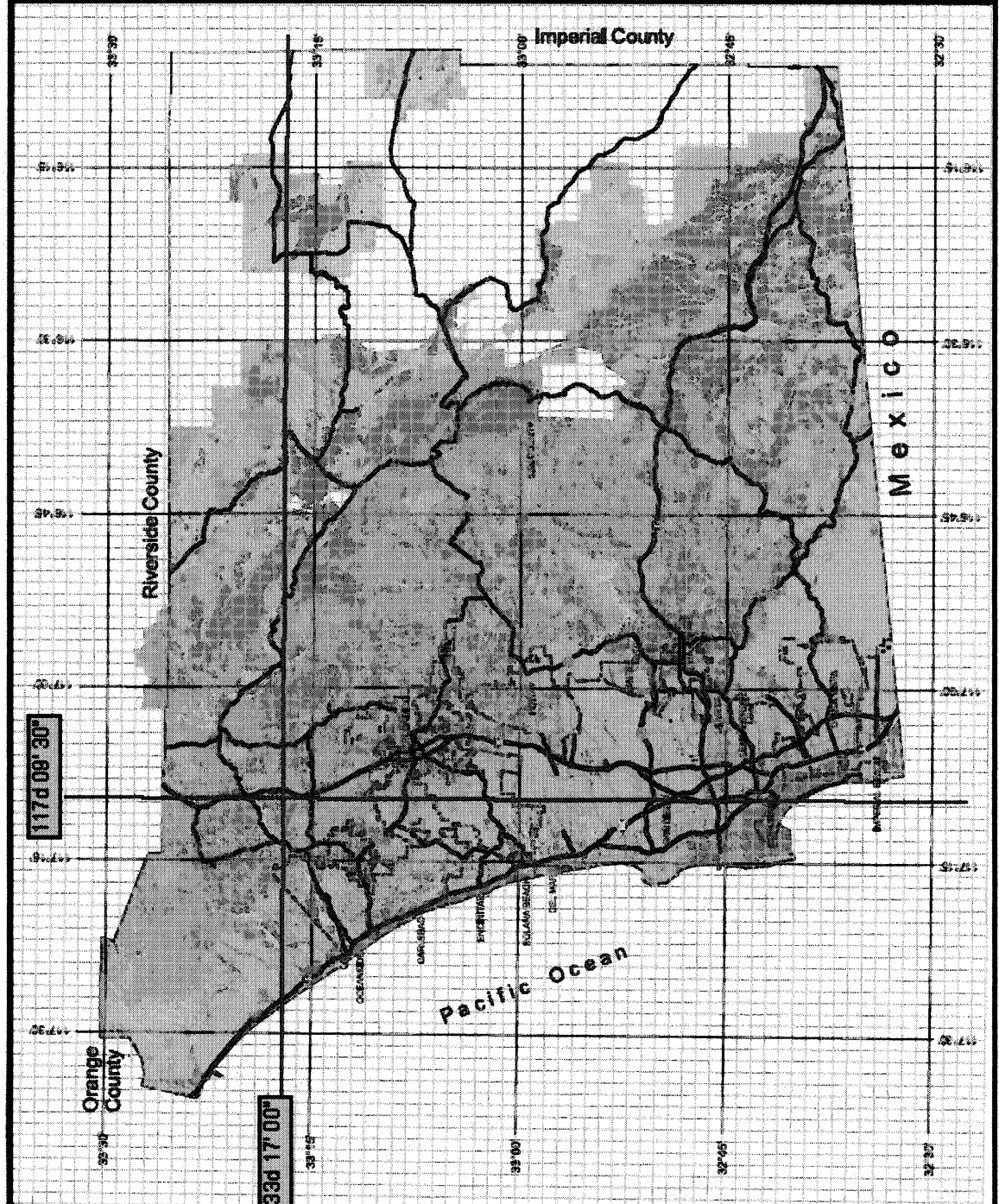
### Legend



AD 05-038  
Soil Group 'B'

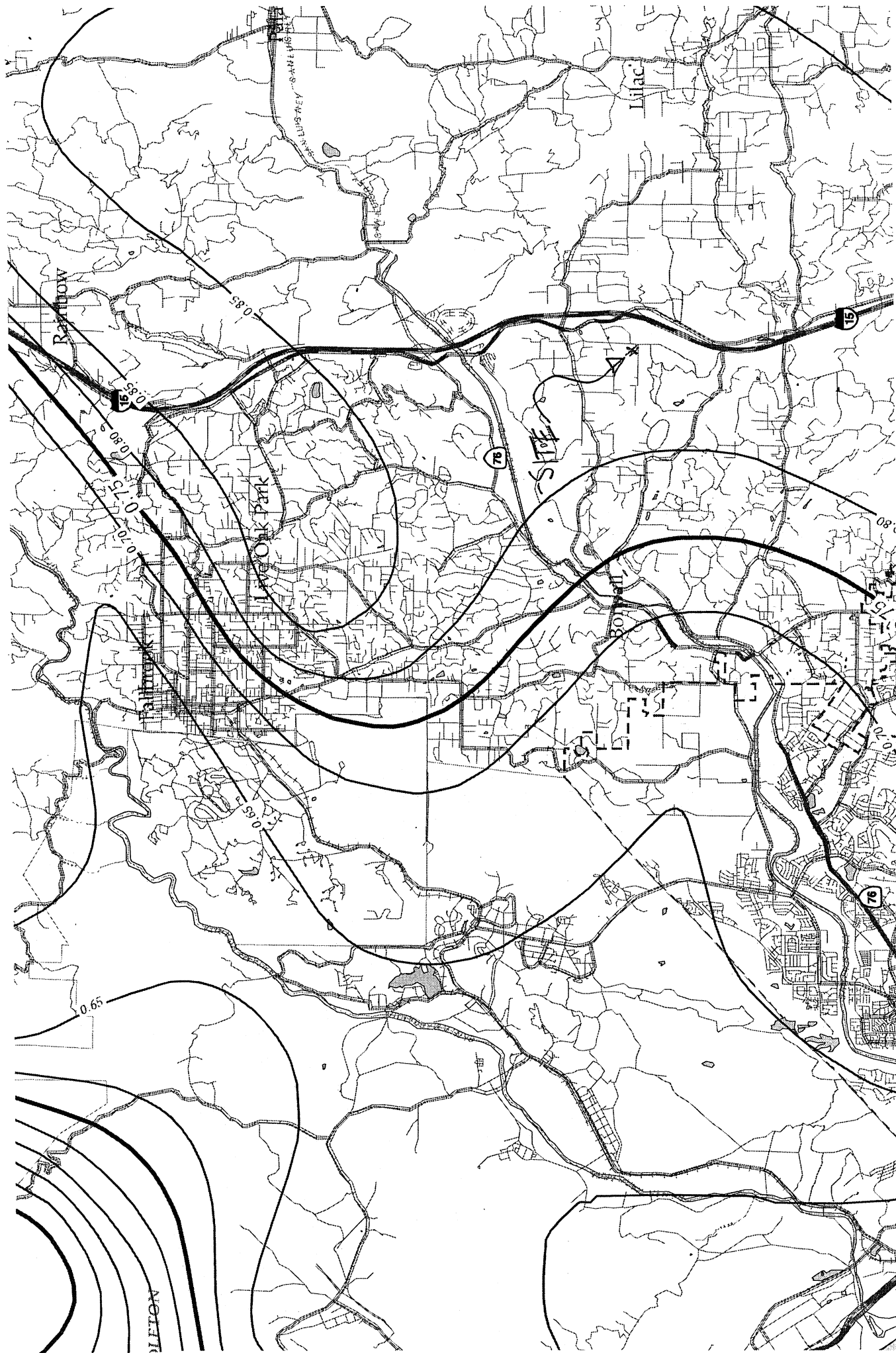


SanGIS is a public information system that provides a web-based interface to the County's spatial data. It is designed to be a one-stop source for all spatial information. The system is designed to be user-friendly and easy to use. It is designed to be a one-stop source for all spatial information. The system is designed to be user-friendly and easy to use.













**TABLE A: MINIMUM REQUIRED CONSTRUCTION BMPs**

Minimum Required Best Management Practices	(★) If used, these BMPs must be shown on the grading plan.	CALTRANS Stormwater Quality Handbooks (Nov '01)	California Storm-water BMP Handbook for Construction	Will BMP Be Used?		If No, State Reason
				Yes	No	
1. A. Erosion Control - Slopes	Must select one (more if needed)					
Vegetation Stabilization Planting (see note 1)	★	SS-2 SS-4	ESC10	X		
Hydraulic Stabilization Hydroseeding (see note 1)	★	SS-3 SS-4	ESC10		X	"ICE PLANT" GROUND COVER
Bonded Fiber Matrix (see note 2)	★	SS-4	ESC11		X	ONLY IN ARENA'S
Physical Stabilization Erosion Control Blanket(see note 2)	★	SS-7	ESC20		X	COMPLY w/ NOTE #1
1. B. Erosion Control - Flat Areas(< 5%)	Must select one (more if needed)					
Will use above Slope Control measures on flat areas also	★	SS-2,3,4,7	ESC10, 11,20	X		
Mulch, straw, wood chips, soil application	★	SS-6 SS-8	-	X		
2. Velocity Reduction	Must select one					
Energy Dissipater Outlet Protection (see note 3)	★	SS-10	ESC40	X		
3. Sediment Control	Must select one (more if needed)					
Silt Fence	★	SC-1	ESC50	X		
Straw Wattles	★	SC-5	-	X		
Gravel Bags	★	SC-6 SC-8	ESC52		X	NO UNDERGROUND STORM DRAIN SYSTEM IN THIS AREA
Storm Drain Inlet Protection	★	SC-10	ESC54		X	
Desilting Basin (not used on DPLU permits)	★	SC-2	-			
4. Offsite Sediment Tracking Control	Must select one (more if needed)					
Stabilized Construction Entrance	★	TC-1	ESC24	X		
Construction Road Stabilization	★	TC-2	ESC23	X		
Entrance / Exit Tire Wash	★	TC-3	ESC24	X		
Entrance / Exit Inspection & Cleaning Facility	★	-	-	X		
5. General Site Management	Must select appropriate BMP for each activity proposed					
Materials Management Material Delivery & Storage		WM-1	CA10	X		
Waste Management Concrete Waste Management		WM-8	CA23	X		
Solid Waste Management		WM-5	CA20	X		
Sanitary Waste Management		WM-9	CA24	X		
Hazardous Waste Management		WM-6	CA21		X	NO HAZARDOUS WASTES

**Notes:**

- When Planting or Hydroseeding are selected for erosion control, the vegetative cover must be planted by August 15<sup>th</sup> and established by October 1<sup>st</sup>. If in the opinion of the County Official the vegetative cover is not established by October 1<sup>st</sup>, additional hydraulic or physical erosion control BMPs will be required.
- These BMPs are temporary measures only when used without planting or hydroseeding. All slopes must have established vegetative cover prior to final grading approval.
- Regional Standard Drawing D-40 - Rip Rap Energy Dissipater is also acceptable for velocity reduction.
- Not all grading projects will have every waste identified. The applicant is responsible for identifying wastes that will be on-site and applying the appropriate BMP. For example, if concrete will be used, BMP WM-8 should be selected.

24/29

**TABLE B: ADDITIONAL CONSTRUCTION BMPs**

Additional Best Management Practices	(★) If used, these BMPs must be shown on the grading plan.	CALTRANS Stormwater Quality Handbooks	California Stormwater BMP Handbook for Construction	Will BMP Be Used?		If No, State Reason
				Yes	No	
Erosion Control						
Site Development Considerations		SS-1	ESC1	X		
Scheduling				X		
Preservation of Existing Vegetation	★	SS-2	ESC2	X		
Other (submit description for approval)	★					
Vegetation Stabilization	★	SS-2	-	X		
Vegetation Buffer Strips						
Other (submit description for approval)	★					
Physical Stabilization	★	WE-1	ESC21	X		
Dust Control						
Soil Stabilizers	★	SS-5	-		X	NA
Other (submit description for approval)	★					
Diversion of Runoff	★	SS-9	ESC31	X		
Earthen Dikes						
Ditches and Berms	★	SS-9	-	X		
Slope Drains	★	SS-11	ESC32	X		
Temporary Drains & Swales	★	SS-9	ESC31	X		
Other (submit description for approval)	★					
Velocity Reduction						
Check Dams	★	SS-4	ESC41		X	BROW DITCHES
Slope Terracing	★	-	ESC42		X	
Other (submit description for approval)	★					
Sediment Control						
Brush or Rock Filter	★	-	ESC53	X		
Sediment Trap	★	SC-3	ESC55		X	NA
Sediment Basin	★	SC-2	ESC56	X		
Other (submit description for approval)	★					
General Site Management						
Employee & Subcontractor Training		-	CA40		X	OWNER/BUILDER
Materials Management		WM-4	CA12	X		
Spill Prevention & Control						
Other (submit description for approval)						
Waste Management		WM-7	CA22	X		
Contaminated Soil Management						
Other (submit description for approval)						
Vehicle and Equipment Management		NS-8	CA30	X		
Vehicle & Equipment Cleaning						
Vehicle & Equipment Fueling		NS-9	CA31	X		
Vehicle & Equipment Maintenance		NS-10	CA32	X		
Construction Practices		NS-1	-	X		
Water Conservation						
Structure Construction & Painting		-	CA3	X		
Paving Operations		NS-3	CA2		X	NO PAVING PROPOSED
Dewatering Operations		NS-2	CA1		X	NO DEWATERING REQD
Other (submit description for approval)						



## APPENDIX H Estimated O & M Costs for BMP Project

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.																	
									Labor			Equipment		Materials		Total	Comments
									Per. Hrs	Rate		Cost	Type	Days	rate		
BIOFILTER – STRIPS and SWALES																	
Preventive Maintenance and Routine Inspections																	
ROUTINE ACTIONS	MAINTENANCE INDICATOR	FIELD MEASUREMENT	MEASUREMENT FREQUENCY	MAINTENANCE ACTIVITY	SITE-SPECIFIC REQUIREMENTS												
Height of vegetation	Average vegetation height exceeds 12 inches, emergence of trees, or woody vegetation	Visual inspection of vegetation throughout strip/swale	Once during wet season, once during dry season,(depending on growth)	Cut vegetation to an average height of 6 inches	Remove any trees, or woody vegetation.			10	43.63	436.3	one-ton truck & hydroseeder	2	26.84	53.68	50	539.98	
Assess adequate vegetative cover	Less than 90 percent coverage in strip invert/swale or less than 70 percent on swale side slope	Visual inspection of strip/swale. Prepare a site schematic to record location and distribution of barren or browning spots to be restored. File the schematic for assessment of persistent problems.	Assess quantity needed in May each year late wet season and late dry season.	Reseed/revegetate barren spots by Nov.				8	43.63	349.04	one-ton truck & hydroseeder	1	48.15	48.15	150	547.19	
				Scarify area to be restored, to a depth of 2-inches. Restore side slope coverage with hydroseed mixture.													
Inspect for debris accumulation				If after 2 applications (2 seasons) of reseeded/revegetating and growth is unsuccessful both times, an erosion blanket or equivalent protection will be installed over eroding areas													
	Debris or litter present	Visual observation	During routine trashing, per Districts schedule.	Remove litter, and debris.	None			0	43.63	0	one-ton truck & hydroseeder	0	26.84	0	blanket	0	0
Inspect for accumulated sediment				Remove sediment. If flow is channelled, determine cause and take corrective action. If sediment becomes deep enough to change the flow gradient, remove sediment during dry season, characterize and properly dispose of sediment, and revegetate.													
	Sediment at or near vegetation height, channeling of flow, inhibited flow due to change in slope.	Visual observation	Annually					16	43.63	698.08	one-ton truck & hydroseeder	1	48.15	48.15	300	1046.23	once every three years

1

Estimated values derived from Caltrans Pilot BMP Study. This spreadsheet will change as additional data becomes available.															
						Labor		Equipment			Materials		Comments		
						Per. Hrs	Rate	Cost	Type	Days	rate	Cost		Item	Cost
Inspect for burrows	Burrows, holes, mounds	Visual observation	Annually and after vegetation trimming.	Notify engineer to determine if regrading is necessary. If necessary, regrade to design specification and revegetate swale/strip. If regrading is necessary, the process should start in May. Revegetate strip/swale in Nov. Target completion prior to wet season.	None	2	43.63	87.26							
	Inlet structures, outlet structures, side slopes or other features damaged, significant erosion, emergence of trees, woody vegetation, fence damage, etc.					0	0	0	one-lon truck & hydroseeder	0	26.84	0		0	
General Maintenance Inspection	Visual observation	Semi-Annually, late wet season and late dry season.	Corrective action prior to wet season. Consult engineer if an immediate solution is not evident.	Remove any trees or woody vegetation.		16	43.63	698.08	one-lon truck & hydroseeder	2	26.84	53.68		751.76	
TOTAL BIO FILTER AND SWALES						52		2268.76				203.66	500	2972.42	
BIO STRIP WITH SPREADER DITCH				Includes all the above plus the following.				0				0		0	
Inspect for standing water	Water accumulation in spreader ditch	Standing water in spreader ditch	Within 72 hours after a storm event 0.75 inches or greater.	De-water the spreader ditch to a depth of less than 0.25 inches. If sediment impedes the de-watering activity, then move or remove that portion of the sediment. Characterize and properly dispose.		3	43.63	130.89		0	0	0		130.89	
						6	43.63	261.78						261.78	

 $27/20$

## **Treatment BMP Data**

The treatment BMP was designed to best address the site and use conditions found at this location. The site is on the side of a gently sloping hill, located near the top. Because of the need for a riding arena, flat areas will be created and also sloped areas. This results in a tiered formation which will require channels to direct storm water rather than the sheet flow which previously existed. Grassy swales are a natural choice for Treatment BMPs for this project.

The grassy swales will be a modified D75 lined channel. A specific construction specification is provided on the preliminary grading plan which is a part of this submittal.

At the outfall of the grassy swales are Energy Dissipaters constructed per RSD D-40. These will be necessary to address the velocity as the channel reaches a slope of 9% and will also allow for further filtration of particulates.

## **Operation and Maintenance Program for BMPs**

The operation of the Post Construction BMPs is minimal. There are no “working” parts which need maintenance, repair or attention of any kind. The Post Construction BMPs are self perpetuating.

Maintenance will be performed by the property owner, who lives on site. Regular inspections will occur nearly on a daily basis. Repairs will be made on a regular basis as follows, during the rainy season repairs will be made weekly, and during the dry season repairs will be made monthly. Additional inspections will be made during rain events to insure BMPs are functioning properly.

Repairs will be made to grassy swales to replace dead or missing lining, eroded or damaged bermes or channel sides, and removal of debris and silt. Repairs will be made to the energy dissipaters to insure containment of flow, and remove debris and silt. Debris and silt shall be removed from the site via the waste removal program ( the animal waste).

The funding for the operation and maintenance of the Post Construction BMPs will be provided by the owner. This project is a large risk for the owners who have invested a significant amount of their personal worth to undertake. If the grounds and the facilities are not maintained, this investment will be lost. The owners have a great incentive to maintain this property.

**BEST MANAGEMENT PRACTICES OPERATION AND MAINTENANCE  
PROGRAM FOR TREATMENT BMP'S**

Treatment BMP's consist of grassy swales using a modified D-75, lined ditch and energy dissipators using a D-40 Rip-Rap structure. The operation of these BMP's will require no physical attention, they are both self-perpetuating. Maintenance will be performed by the property owner who resides on-site.

Maintenance will consist of monthly visual inspections to identify any possible deficiencies, which may include, side slope deterioration, ditch liner deterioration, obstruction to water flow, and any possible impending problems. These inspections and a more rigorous repair program will be necessary at a more frequent schedule during the rainy season in order to avoid major damage to the storm water system. At a minimum these inspections shall be performed immediately prior to and after a rain event. Repairs shall be performed immediately upon discovery.

Estimated cost to maintain swales is \$200.00 per month. Average cost of \$2400.00 to \$2600.00 per year.



MICHAEL W. SMITH R.C.E.44590